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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,399	01/14/2002	Takashi Enomoto	215225US2PCT	1665

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EXAMINER

COLON, GERMAN

ART UNIT PAPER NUMBER

2879

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,399

Applicant(s)

ENOMOTO ET AL.

Examiner

German Colón

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-10, 13 and 14 rejected under 35 U.S.C. 102(b) as being anticipated by Pepi et al. (US 5,876,260).

Regarding claim 1, Pepi discloses a manufacturing method of a flat display panel comprising:

joining a substrate, which has an electron emitting element, and a faceplate, which has a phosphor screen, so that the electron emitting element and the phosphor screen face to each other with a gap; and

irradiating electrons onto at least one of the substrate and the faceplate, in a vacuum atmosphere (see Col. 5, lines 45-50).

Regarding claim 2, Pepi discloses the irradiating of electrons having accommodating at least one of the substrate and the faceplate in a treatment vessel (see Fig. 3), and irradiating the electrons onto at least one of the substrate and the faceplate accommodated in the treatment vessel from one or more electron sources disposed therein (see Col. 5, line 11).

Regarding claim 3, Pepi discloses the electrons being irradiated by a plurality of electron sources, disposed on the treatment vessel (see Col. 5, line 26-27). The Examiner notes that Pepi discloses microtips as electron sources, each microtip irradiating electrons, therefore, each of

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said microtips is a source of electrons. Furthermore, the provision of a plurality of electron sources is a matter of design choice practiced by a person skilled in the art.

Referring to claim 5, Pepi discloses the electrons being emitted from a planar type electron source (see Col. 5, line 27).

Referring to claim 6, Pepi discloses the electrons being irradiated in a vacuum atmosphere of which degree of vacuum is maintained at 10^{-3} Torr or less (see Col. 4, lines 65-66).

Referring to claim 7, Pepi discloses the electrons being irradiated while heating at least one of the substrate and the faceplate in the irradiating of electrons (see Col. 5, lines 1-11 and Col. 8, lines 10-12).

Regarding claim 8, Pepi discloses at least one of the substrate and the faceplate being heated at a temperature in the range of 200 to 400°C in the irradiating of electrons (see Col. 5, lines 1-11 and Col. 8, lines 10-12).

Regarding claim 9, Pepi discloses after the irradiating of electrons, an irradiated object is cooled to a temperature of 100°C or less (see Col. 5, line 4). The Examiner notes that after the irradiating of electrons, no further heating step is carried out, thus, the temperature is 100°C or less in view of Col. 5, line 4).

Regarding 10, Pepi discloses the substrate and the faceplate being joined through a supporting frame in a vacuum atmosphere after the electrons are irradiated onto at least one of them (see Col. 5, lines 45-49 and Col. 6, lines 8-10).

Referring to claim 13, Pepi discloses a manufacturing equipment of a flat panel display, comprising (see Col. 4, lines 11-28 and Col. 5, line 11):

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a treatment vessel in which at least one of a substrate and a faceplate is accommodated (see Fig. 3);

transferring means for sending at least one of the substrate and the faceplate in and out of the treatment vessel (see Fig. 3);

exhausting means for evacuating the inside of the treatment vessel to a vacuum atmosphere;

irradiating means for irradiating an electron beam onto at least one of the substrate and the faceplate;

joining means for joining the substrate and the faceplate, at least one of which is irradiated with the electron beam (see Figs. 4-6).

Regarding claim 14, Pepi discloses means for heating at least one of the substrate and the faceplate, which are accommodated in the treatment vessel.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pepi et al. (US 5,876,260) in view of Chen (US 3,732,359).

Pepi discloses the claimed invention except for the limitation of "the electrons being deflected while irradiated". Pepi teaches the electron source being a conventional scanning

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electron gun (see Col. 5, line 21). Chen discloses a scanning electron gun and teaches said electron gun comprising deflection means in order to scan the electron beams. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide deflection means to the electron gun of Pepi, since Pepi teaches said electron gun being a conventional scanning electron gun which Chen discloses comprising deflection means in order to scan electron beams. Further, it is well known in the art that electron guns comprise deflection means.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pepi et al. (US 5,876,260) in view of Browning et al. (US 6,409,564).

Pepi discloses the claimed invention except for the limitation of "the supporting frame being irradiated with electron in the irradiating of electrons". However, in the same field of endeavor, Browning teaches that the release of oxygen (and sulfur) from the phosphor, organic binders and metal layers may oxidize the emitting tip, which accounts for serious degradation problems in FEDs, and that electron bombardment is used to remove oxygen from the display (see Col. 4, lines 45-54 and Col. 7, lines 5-15). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to irradiate the supporting frame of Pepi, which comprises metal and silicon oxide, in order to remove the oxygen from the display that may oxidize the emitting tip, resulting in serious degradation problems in FEDs.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pepi et al. (US 5,876,260).

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Pepi discloses the claimed invention except for the limitation of "the irradiating of the substrate and the faceplate being carried out in the same treatment vessel". However, Pepi teaches that the choice of transfer between the various sections of the installation depends on the equipment thereof, provided that the plates are not put to air between the various sections; further an embodiment wherein the plates are manually handled or transferred is disclosed (see Col. 8, lines 13-20). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to irradiate the substrate and the faceplate in the same treatment vessel, in order to facilitate the manufacture of the FED provided that the plates are manually handled or transferred. Further, a person skilled in the art could have easily conceived of treating the substrate and the faceplate in the same treating vessel.

Prior Art of Record

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Watkins et al. (US 6,302,758), discloses an FED treated with an electron beam irradiation.

Ito et al. (US 5,054,421), discloses a substrate cleaning device comprising a plurality of electron sources.

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 703-305-5987. The examiner can normally be reached on Monday thru Friday, from 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 703-305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

AC
gc

May 2, 2003

Kenneth J. Ramsey
Kenneth J. Ramsey
Primary Examiner